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II. PROPERTY DESCRIPTION

This property description presents the ecological and historical parameters that affect the Hallelujah Junction Wildlife Area. Understanding these regional and site-specific conditions will help guide the California Department of Fish and Game in its efforts to adaptively manage the resources at this site.



Aerial panorama of the Long Valley Creek watershed.
Image courtesy of Dr. William A. Bowen, California Geographical Survey
<http://geogdata.csun.edu>

A. Geographic Setting

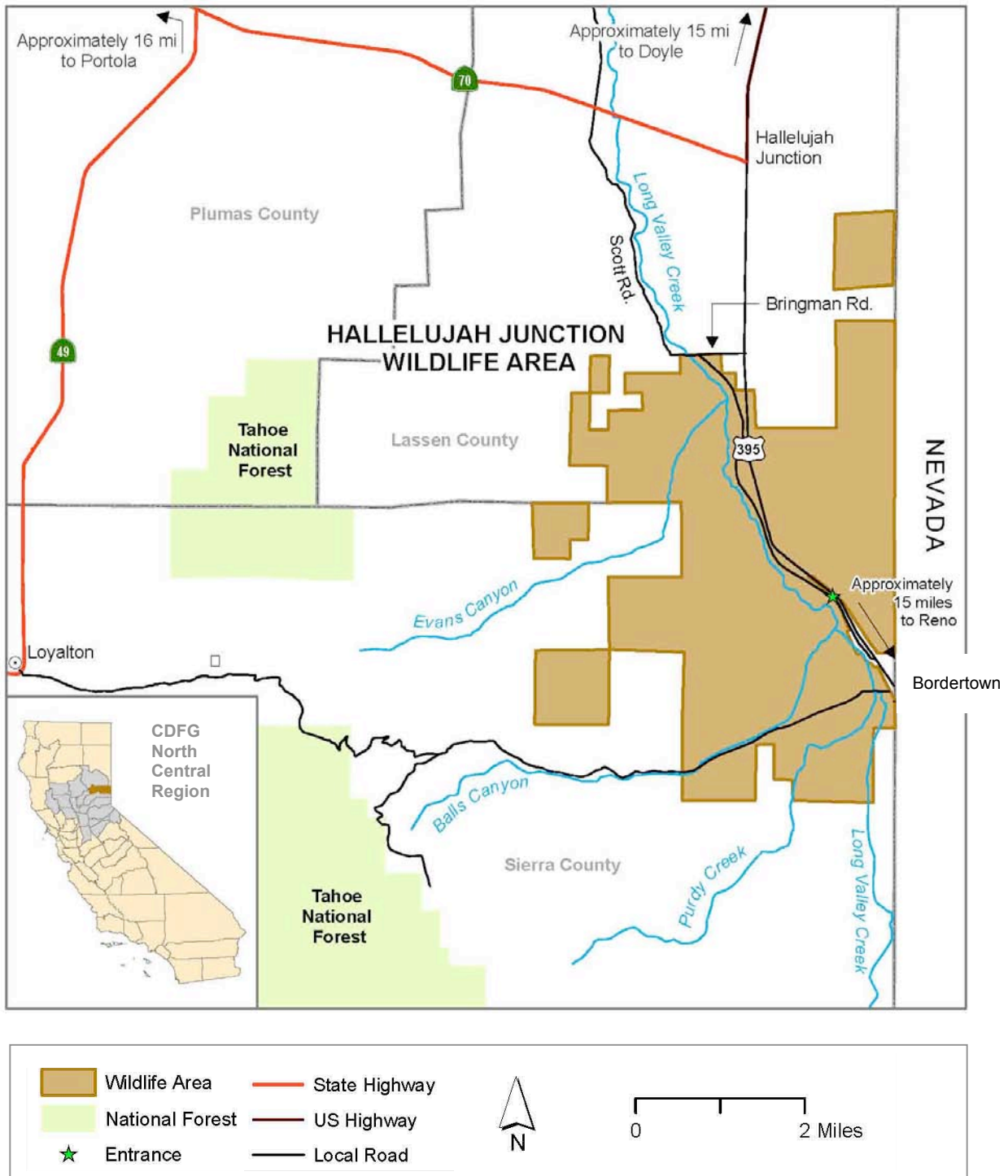
The 13,394-acre Hallelujah Junction Wildlife Area (HJWA) is located in Long Valley in the southern portion of the Modoc Plateau Bioregion in California at the western edge of the Basin and Range Geomorphic Province. Long Valley Creek, the southernmost tributary in the Honey Lake Watershed, bisects the Wildlife Area. The creek gathers water from the adjacent mountains and meanders north through the valley, ultimately discharging into the Honey Lake Basin. Approximately two thirds of the Wildlife Area lies to the west of Long Valley Creek and one third, mostly the foothills and slopes of the Petersen Mountains, lies to the east of the riparian corridor. Typical of eastern California Great Basin habitats, the HJWA provides a mosaic of sagebrush scrub (*Artemisia tridentata*), bitterbrush (*Purshia tridentata*), juniper woodlands (*Juniperus occidentalis* and *J. osteosperma*), wet meadows and wetland habitats.

The HJWA is in the northeastern portion of Sierra County and the southeastern corner of Lassen County. The Nevada border defines its eastern edge; Cold Springs, a rapidly growing suburb of Reno at Bordertown, is adjacent to its southeastern border. Just a few miles to the north is Hallelujah Junction, the interchange of U.S. Route 395 and State Route 70 that gives the Wildlife Area its name. U.S. 395 and the Union Pacific Railroad run through the middle of the Wildlife Area, parallel to Long Valley Creek, separating the eastern segment from the riparian corridor. Reno is 15 to 20 miles south on U.S. 395. (Figure II-a)



U.S. 395 bisects the Hallelujah Junction Wildlife Area. View looking south near interchange with State Route 70. February 2006, SEI.

Figure II-a. Regional Location, Hallelujah Junction Wildlife Area



Source: California Department of Fish and Game, North Central Region, May 2008, Patrick Tice (prepared by BDB for WB). Adapted by SEI.

B. Property Boundaries

The HJWA is located in Townships 21 and 22 North (T21N, T22N) and Ranges 17 and 18 East (R17E, R18E) on the Evans Canyon and Beckwourth Pass U.S. Geological Survey (USGS) 7.5-minute topographic quadrangles in Lassen and Sierra counties, California. Initially acquired in 1989, and expanded in six subsequent acquisitions through 2005, the HJWA consists mainly of parcels that formerly made up the Evans Ranch and Green Gulch Ranch along with parcels acquired from the Bureau of Land Management (BLM) through a land exchange program. Table II-a summarizes the parcels and acquisition history. Legal descriptions of the parcels that make up the Wildlife Area are on file at CDFG's North Central Region headquarters and the HJWA office.

The Wildlife Area is approximately four miles wide and about six miles long. Figure II-b depicts the actual parcels and property boundaries that compose the HJWA, which is mostly contiguous with a disjunct parcel at the northeast corner and one on the west side south of Haskell Peak. The parcel map differs slightly from the HJWA boundary map supplied by CDFG. The CDFG boundary file currently depicts one parcel in the northeastern section of the Wildlife Area between 147-090-09 and 147-060-06 as part of the HJWA. The CDFG boundary file was used as the basis for figures provided throughout this LMP. Correcting the CDFG boundary file is a step-down activity (VB1).

Table II-a. Acquisition History,¹ Hallelujah Junction Wildlife Area

Year	Prior Owner	Lassen County		Sierra County		Total Acres
		APN ²	Acres	APN ²	Acres	
1989	Evans Ranch, Inc (original purchase)	147-090-10	687	021-020-08	640	
		147-090-12	99	021-020-22	101	
		147-090-21	2	021-020-25	383	
		147-090-22	3	021-020-26	526	
		147-090-24	36	021-020-28	200	
		147-090-26	16	021-020-29	320	
		147-090-28	8	021-080-12	80	
		147-090-29	441			
		Lassen Subtotal	1292	Sierra Subtotal	2250.00	3742
1993	Evans Ranch, Inc	147-060-06	258	021-080-14 ³	263	
		147-080-04	77	021-040-24	198	
		147-080-08	591	021-020-27	188	
		147-080-10	38			
		147-080-18	159			
		147-090-09	77			
		147-090-23	499			
		147-090-25	359			
		147-090-27	8			
		Lassen Subtotal	2153	Sierra Subtotal	649	2802

II. PROPERTY DESCRIPTION
B. Property Boundaries

Year	Prior Owner	Lassen County		Sierra County		Total Acres
		APN ²	Acres	APN ²	Acres	
1993	Ryan	147-080-09	38			
		Lassen Subtotal	38			38
1997	Richard Brown (seller)			021-030-04	640	
				Sierra Subtotal	640	640
1998	Nevada Bighorns Unlimited BLM Land Exchange			021-070-03	116	
				021-070-01	531	
				021-070-02	409	
				021-080-01	278	
				021-020-02	319	
				021-010-04	319	
				Sierra Subtotal	1972	1972
2004	Green Gulch Ranch			021-020-16	120	
				021-040-10	40	
				021-040-20	258	
				021-040-22	497	
				021-040-25	320	
				021-040-26	315	
				021-080-16	1	
				021-080-18	257	
				021-090-06	339	
				Sierra Subtotal	2147	2147
2005	Evans Ranch Associates	147-060-03	510	021-020-23	357	
		147-080-07	347	021-040-09	640	
				021-040-23	200	
		Lassen Subtotal	857	Sierra Subtotal	1197	2067.53
2008	TOTAL HJWA	Lassen	4,339	Sierra	9,055	13,395

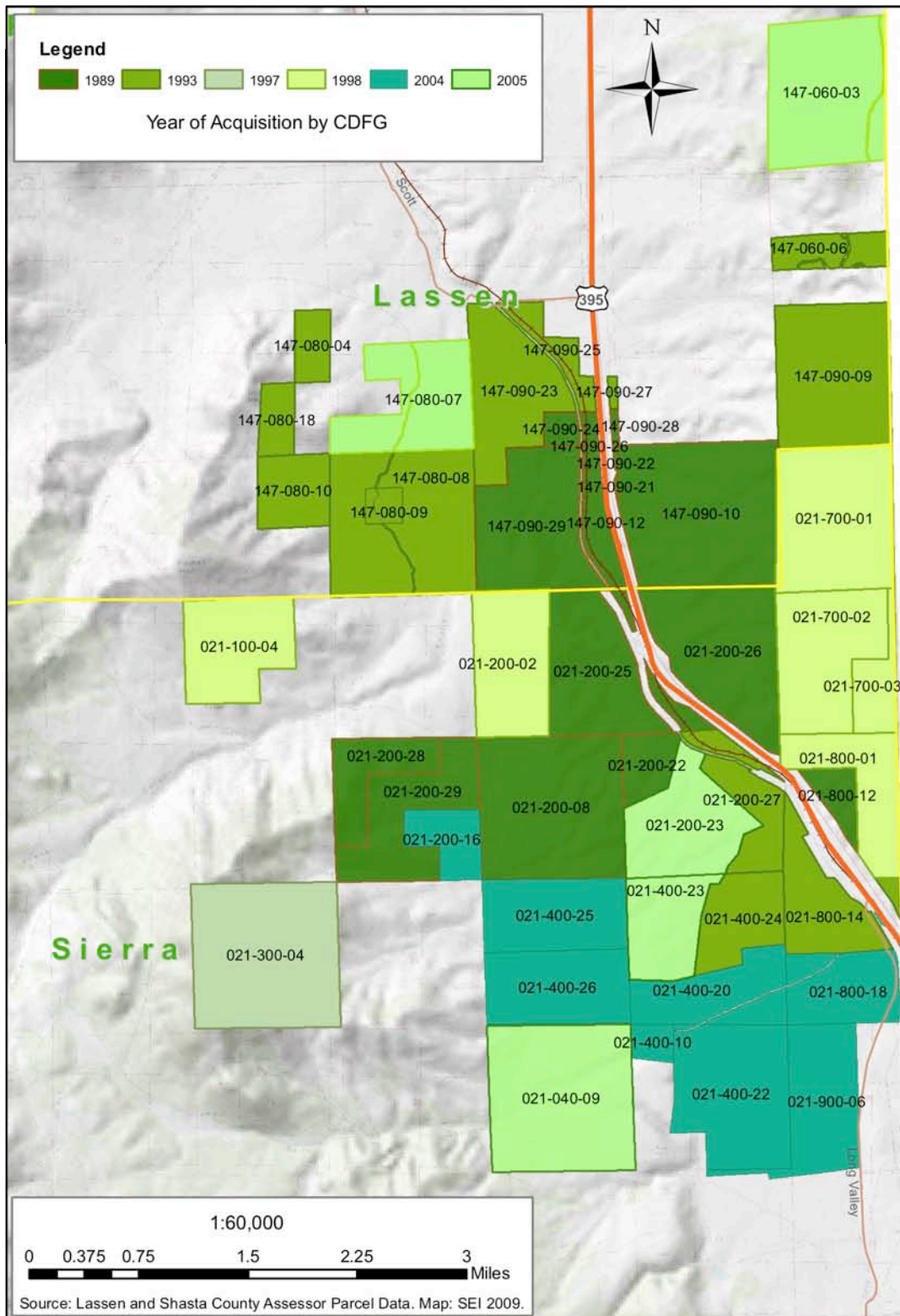
¹ Parcel numbers and acreage verified by Lassen and Sierra County Assessor Parcel Data

² APN numbers reflect preferred CDFG format, which differs slightly from that used by Lassen and Sierra County Assessor Parcel Data

³ Formerly Parcel 021-080-13

Source: CDFG

Figure II-b. Parcel Map and Property Boundaries, Lassen and Sierra Counties, Hallelujah Junction Wildlife Area



1. Adjacent Land Use

Federal lands largely border the HJWA, with BLM holdings on the east side, and the Tahoe National Forest to the west. The city of Santa Clara, California, owns two undeveloped neighboring sections (3 and 9) in Evans Canyon that, along with two privately held properties, account for the disjunct parcel on the south side of Haskell Peak. Private land use on the north side is primarily grazing lands. Ranches here consist of large cattle and hay operations with houses and multiple outbuildings. The Balls Canyon Ranch borders the Wildlife Area's southwest corner, and there have been discussions about the development of a resort on the property (J. Lidberg, CDFG Area Manager [ret.], personal communication).

Urban development has expanded along the U.S. 395 corridor from Reno and is encroaching on the HJWA from the southeast. Residential development at Cold Springs adjoins the southeast corner of the Wildlife Area east of the highway, and the commercial outpost of Bordertown shares a common boundary. Other development nearby includes industrial parks, homes on large lots, and ranch style homes with small acreages.

Properties making up the HJWA have been used historically for livestock grazing, most recently in conjunction with adjacent and nearby public land under an allotment plan administered by BLM. The portions of Lassen and Sierra counties in which the Wildlife Area is situated are designated open range; it is the responsibility of the landowner to fence livestock out rather than that of the livestock owner to fence the animals in (Andes 2000). The HJWA is largely fenced and access is restricted. Within the Wildlife Area, the riparian corridor along Balls Canyon Creek has been fenced to exclude livestock to protect habitat and prevent adverse impacts to water quality. Under crossings and deer-proof fencing with one-way gates (constructed during expansion of U.S. 395) facilitate deer migration and have reduced highway deer mortality (Kahre 1980). The primary access to HJWA is along the west side of U.S. 395 approximately 0.75 mile south of the Sierra County line sign on the highway (Lidberg, personal communication). Gates at property boundaries provide access between the main unit and isolated parcels.

2. Easements and Rights-of-Way

Easements and rights-of-way are legally recorded documents that run with the deed of the property, and are transferred with the property from owner to owner. Easements typically preserve the rights of an entity other than the landowner. Over the years, scores of easements have been granted or reserved by former owners of the parcels that make up the Hallelujah Junction Wildlife Area (Appendix A). Many of these are probably obsolete, while successors or heirs of the original grantees may hold other active easements.

Rights-of-way for railroads were recorded first, dating back to 1883, followed by utility easements in 1905, and highway easements in the 1920s. These easements facilitated much of the early transportation, power, and communication development in Long Valley. Since then, subsequent easements have been granted as those original systems were expanded or modified.

Other easements cover a variety of subjects ranging from drainage facilities to preserving the right of the people to fish. Former owners have reserved water rights on some parcels along with rights for water exploration and well development. Ingress-egress easements have been granted for grazing and a variety of other purposes. Mineral rights on HJWA parcels were patented as early as 1928 and

reserved as recently as 1989. Parcels acquired in the 1998 land exchange with BLM are subject to a covenant by Executive Order No. 11990 to maintain existing wetlands. Since establishment of the HJWA, one grantee has asserted an easement through Civil Code 813. The Walima Corporation claims an easement granted in 1982 for a road through T21N R17E, Sections 13, 14, 19, and 24, to the adjoining Balls Canyon Ranch. Some of these easements, if exercised, appear to have the potential to impact the Wildlife Area or its management. The proposed road to Balls Canyon Ranch and development associated with mineral exploration and recovery are examples.



View of Long Valley Creek, Western Pacific railroad and Pacific telephone lines bisecting HJWA. February 2006, SEI.

C. Geomorphology, Climate and Water

1. Geology and Soils

Long Valley, the geological home of the HJWA, is an elongated north-south trending basin located at the western edge of the Basin and Range Geomorphic Province, bounded by Peavine Peak to the south, the Diamond Mountains to the northwest, the Petersen Mountains to the east, and the Honey Lake Valley Basin to the north (Figure II-c). Elevations range from about 5000 feet on the valley floor to 6150 feet on the east side and 6900 feet on the slope of Haskell Peak on the west side (DWR 2004). The Diamond Mountains consist of Mesozoic granitic rocks. The Petersen Mountains consist mainly of Cretaceous to Jurassic granitic rocks with exposures of metavolcanic rocks near Cold Springs Valley. Two east-dipping normal faults are inferred to lie along the western and central parts of Long Valley. The two major faults include the Diamond Mountain Fault and a central unnamed fault that extends from Peavine Peak through Reno (Hallelujah) Junction. Long Valley is generally an asymmetric half-graben development. Valley sequences are tilted westward and sediments are deep (ibid.). The valley is bordered by Washoe County, Nevada, on the east.

South of S.R. 70, bedrock is shallow (150–300 feet in depth) between the Sierra Nevada and the central segment of the Long Valley fault. Pleistocene non-marine sedimentary rocks constitute valley fill in this region. These older valley fills underlie terraces along the west side of the valley. East of the central fault, the valley is underlain by a thick, west-dipping Pliocene non-marine sequence referred to as the Hallelujah Formation. This sequence thins to a few hundred feet near the community of Bordertown and forms a north-trending anticline between Cold Springs Valley and the southern-most part of Long Valley (ibid.).

Complex sedimentation patterns have formed Long Valley and the soils that underlie the HJWA. As shown in Figure II-d, most of the HJWA consists of terraces and dissected alluvial fans that reflect their sources on either side of the valley. Not surprisingly, there are strong differences in the soil types found east and west of U.S. 395. Table II-b lists soil types in the Wildlife Area and their proportional extent. Soil descriptions are from the Natural Resources Conservation Service (NRCS 2008).

Figure II-c. Panorama of Long Valley/Honey Lake Basin Watershed



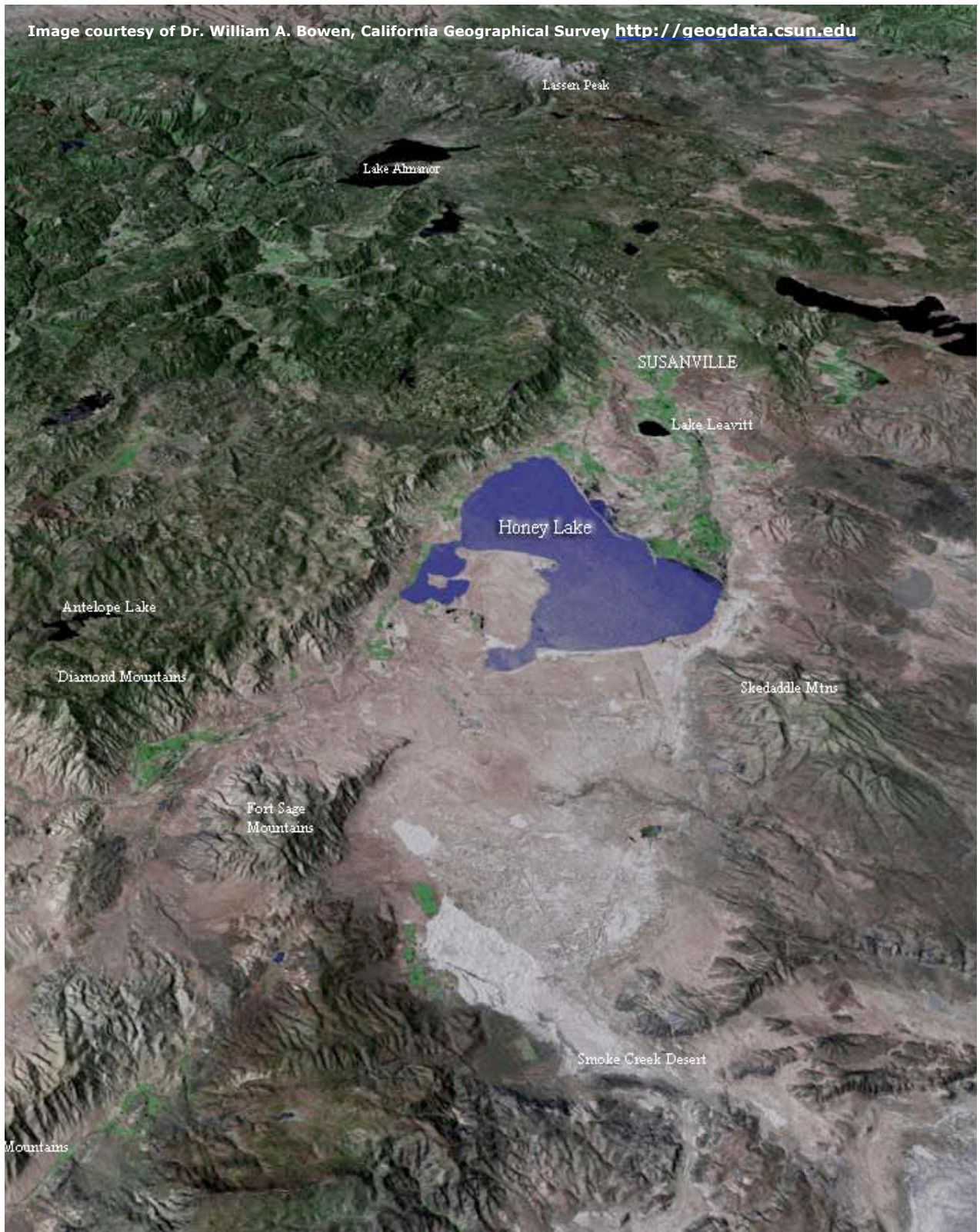
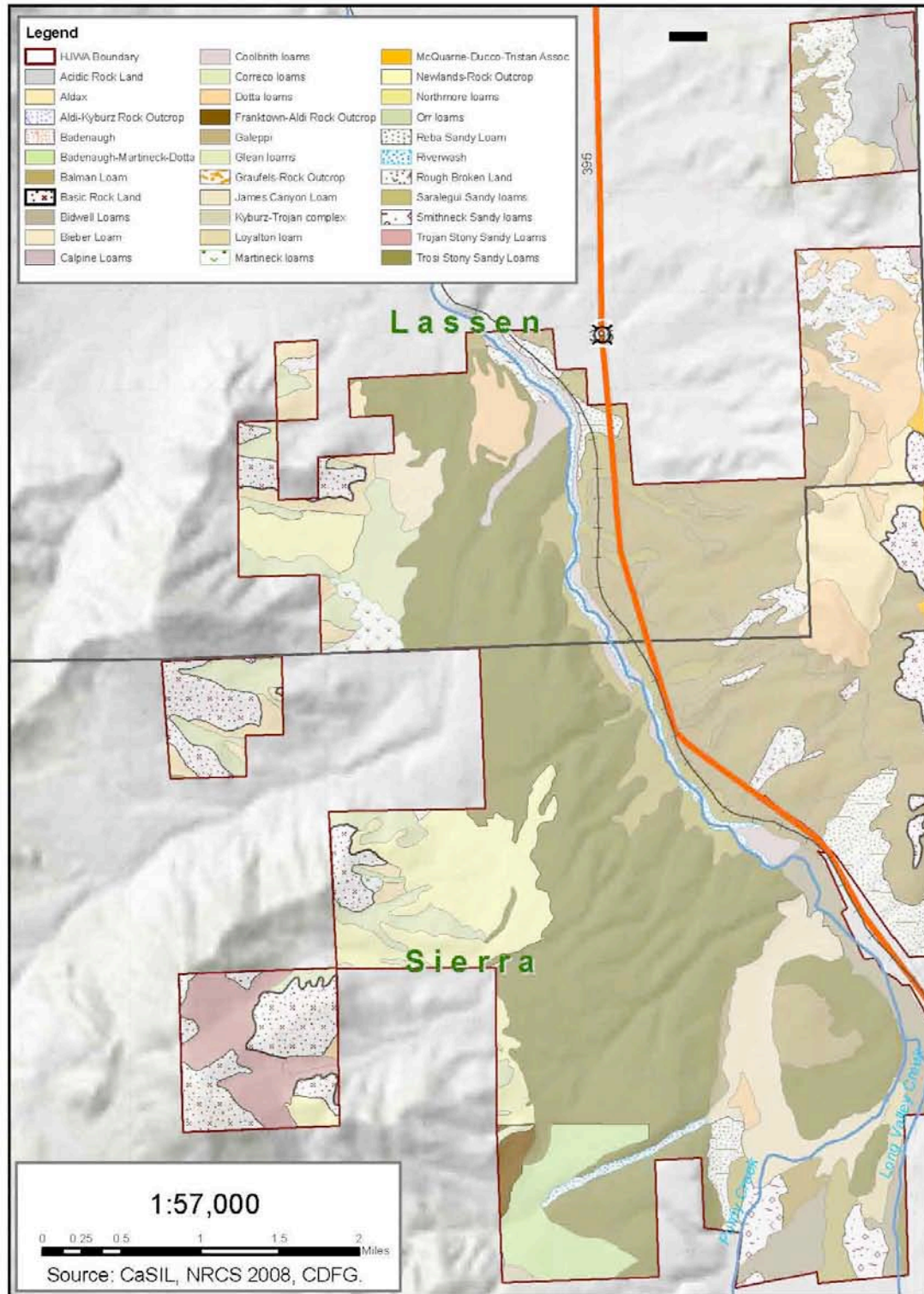


Figure II-d. Distribution of Major Soil Types, Hallelujah Junction Wildlife Area



Map: SEI 2009

Table II-b. Soil Types by Proportional Extent, Hallelujah Junction Wildlife Area

Soil Type (most prevalent to least prevalent)	% Slope	% Acreage
Trosi Very Stony Sandy Loam	2 to 15	15.26
Galeppi Loamy Course Sand	5 to 30	12.09
Trosi-Saralegui Complex, Eroded	15 to 50	9.19
Newlands-Rock Outcrop Complex	2 to 30	5.94
Basic Rock Land	--	5.73
Trosi Extremely Stony Sandy Loam	2 to 15	4.80
Galeppi Cobbly Loamy Coarse Sand	5 to 30	4.25
Dotta Cobbly Sandy Loam	2 to 30	3.70
Saralegui Sandy Loam	2 to 15	3.30
James Canyon Silt Loam	0 to 2	3.23
Rough Broken Land	--	3.10
Glean Extremely Sandy Stony Loam	9 to 50	3.05
Aldax-Rock Outcrop Complex	15 to 75	2.65
Reba Sandy Loam	2 to 30	2.49
Badenaugh-Martineck-Dotta Association	2 to 30	2.24
Aldax-Millich Complex	5 to 30	1.98
Trojan Stony Sandy Loam	30 to 50	1.94
Bidwell Sandy Loam	0 to 2	1.90
Acidic Rock Land	--	1.33
Correco Very Cobbly Sandy Loam	2 to 30	1.21
Smithneck Sandy Loam	--	1.11
Riverwash	--	1.07
Coolbrith Silt Loam	2 to 5	0.93
Bidwell Loam	0 to 2	0.82
Bieber Gravelly Sandy Loam	0 to 5	0.75
Galeppi Loamy Course Sand	2 to 5	0.75
Ramelli Clay	--	0.72
McQuarrie-Ducco-Tristan Association	--	0.63
Martineck Very Stony Sandy Loam	2 to 30	0.59
Dotta Sandy Loams	2 to 9	0.58
Loyalton Fine Sandy Loam	--	0.49
Calpine Course Sandy Loam	5 to 9	0.40
Franktown-Aldi-Rock Outcrop Complex	30 to 50	0.35
Balman Loam	0 to 2	0.33
Coolbrith Silt Loam	0 to 2	0.30
Graufels-Rock Outcrop Complex	15 to 30	0.17
Trojan Stony Sandy Loams	2 to 30	0.13
Badenaugh Very Cobbly Sandy Loam	2 to 30	0.11
Kyburz-Trojan Complex	9 to 30	0.09
Balman Loam	2 to 5	0.06
Northmore Sandy Loam	4 to 8	0.06
Glean extremely Sandy Stony Loam	9 to 50	0.05
ORR Stony Sandy Loams	4 to 8	0.05
Trosi Very Stony Sandy Loams	2 to 15	0.05
Aldi-Kyburz-Rock Outcrop Complex	30 to 75	0.01
Bidwell Loam	--	0.00

Source: NRCS 2008

EAST SIDE SOILS

Galeppi soils on the east side of Long Valley Creek tend to be deep, well-drained sandy loams formed in alluvium derived from mixed igneous rocks. These soils have slow permeability with relatively high surface runoff, and are typically vegetated by big sagebrush scrub. Weathered ridges of Rough Broken Land punctuate the Galeppi fans. Aldax formations found on the foothill slopes above the Galeppi fans are shallow, well-drained soils formed in material weathered from andesite or basalt. They are characterized by moderately rapid permeability, and medium or rapid surface runoff. On the east side of the HJWA, Aldax soils roughly coincide with the distribution of the juniper woodland habitat type. Further up the slopes and along the weathered ridges of the Petersen Mountains occur rocky soil types that include Acidic Rock Land, Basic Rock Land, and Rough Broken Land. Here, soils are very shallow and rock covers most of the surface; outcrops and boulders are common, with sparse patches of annual and perennial grasses or sagebrush scrub. In the Petersen foothills in the northeast portion of the Wildlife Area is a Dotta terrace. Dotta formations are very deep, well-drained sandy loams formed in alluvium weathered from metamorphic and igneous rock sources. They tend to be of moderately slow permeability, and slow to rapid surface runoff. The terrace is vegetated by sagebrush scrub and scattered junipers. At the base of the hills in the southeast corner of HJWA is an alluvial fan of Reba sandy loam. Reba soils are well-drained, fine sandy clay loams underlain by silty clay. They exhibit slow permeability and slow to rapid runoff.

WEST SIDE SOILS

On the west side of Long Valley, Trosi loams form the terraces and alluvial fans. The Trosi series have light brown, platy, very stony loam A horizons, grading to very cobbly clay B2t horizons underlain by a hard pan. They occur on old terraces and have formed in gravelly, cobbly, and stony alluvium from mixed rock sources. They are characterized as well drained, having very slow permeability, and slow to rapid runoff. Three soils of the Trosi series cover nearly 30% of the HJWA surface (Table II-b) and are typically vegetated by low sagebrush scrub, and perennial grasses.

At the mouths of major drainages on this side of the valley are alluvial fans that reflect their upstream geologic sources. At the mouth of Balls Canyon, in the southern portion of the Wildlife Area, is a complex fan that includes Galeppi, Dotta, James Canyon, Coolbrith, and Bidwell formations. The James Canyon series are very deep, poorly drained soils that formed in alluvium from mixed rocks. They exhibit moderate permeability, low or medium surface runoff, and a seasonal high water table. James Canyon soils underlie much of the riparian scrub and meadow habitats on the Wildlife Area. Coolbrith silt loams have dark gray, medium and slightly acid, loam A horizons, dark brown, slightly acid, clay loam B2t horizons, and dark grayish brown mottled lower B horizons. Found in margins of basins, they formed in alluvium from mixed sources and are characterized as somewhat poorly drained, having moderately slow permeability, and slow or very slow runoff. This formation is at the western edge of the hay meadow.

The Bidwell sandy loam formation is found at the eastern margin of this complex close to the banks of Long Valley Creek. The Bidwell series consists of very deep well-drained soils on fan remnants and fan skirts. They formed in ashy alluvium from tuffaceous rocks. These soils are well drained, with moderately slow permeability, and slow to medium runoff.

Upstream in Balls Canyon, soils of the Badenaugh-Martineck-Dotta association underlie the sides of the canyon. Members of this series are deep soils on fan remnants and stream terraces that formed in

alluvium derived from mixed igneous rocks. They are well drained, with moderately slow permeability, and medium or high surface runoff.

At the mouth of Evans Canyon in the northern portion of HJWA is another alluvial fan complex with Coolbrith and Bidwell formations bounded by a Dotta terrace at the foot of Little Haskell Peak. Further upland, Bieber and Correco formations make up the alluvial fan and terraces at the foot of Haskell Peak and Little Haskell Peak. Bieber gravelly sandy loams are very shallow and shallow to the durapan; soils had formed in alluvium derived from volcanic rocks such as andesite, basalt, and tuff. They are well drained, with very slow permeability, and very high surface runoff. Correco soils are sandy and cobbly sandy loams that formed in alluvium from mixed sources. They are well drained, with slow permeability, and medium runoff. Martineck formations are found on the undulating slopes near the base of Haskell Peak. Soils in this series have an extremely stony sandy loam A1 horizon and an extremely stony, sandy clay B2t horizon underlain by a hard pan. They formed in cobbly and stony alluvium mostly derived from basic igneous rock sources. Low sagebrush scrub vegetates this part of the Wildlife Area.

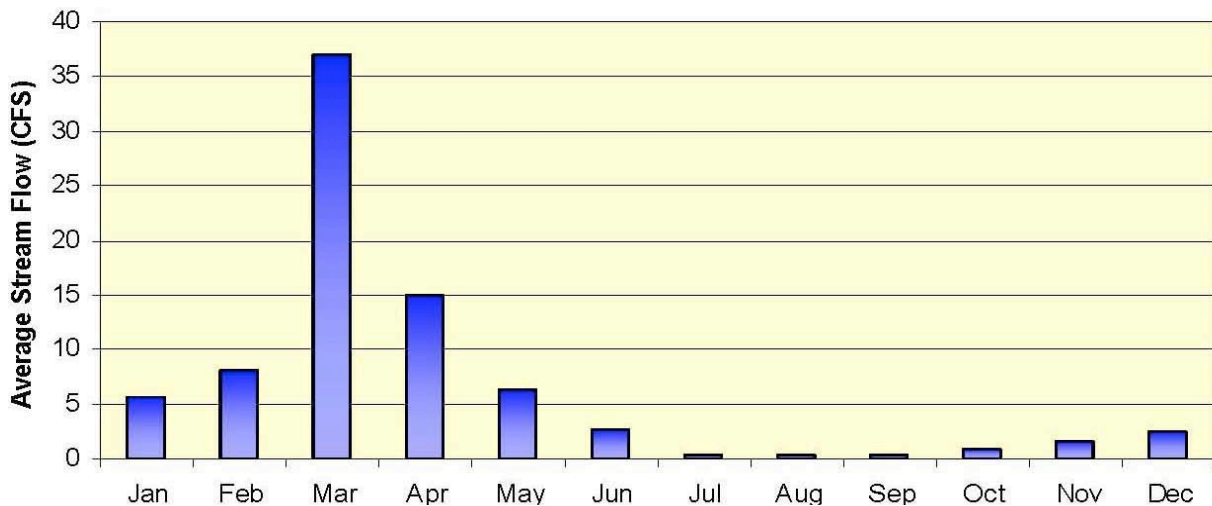
Higher on the western slopes are Aldax, Basic Rock land, Glean, and Newlands-Rock Outcrop formations. Glean soils are extremely stony sandy loams on slopes up to or exceeding 50%. They formed in gravelly, cobbly, and stony colluvium from mixed rocks including metamorphic rocks, basalt, and andesite. This series is well drained, has moderately rapid permeability, and medium to very rapid runoff. Soils of the Newlands-Rock complex are deep soils that formed in residuum and local colluvium from basic rock sources including andesite, basalt, and tuff. They are often found on slightly concave slopes and ridges, are well drained, have moderately slow permeability, and slow or medium runoff. In this portion of HJWA, these formations underlie sagebrush scrub and Jeffrey pine woodland.

On the valley floor, a Saralegui sandy loam formation occurs on both sides of Long Valley Creek and extends laterally into side drainages in the adjacent Galeppi and Troisi terraces. The Saralegui are deep soils that formed in moderately coarse-textured alluvium. They are well drained, have moderately rapid permeability, and medium runoff.

2. Hydrology

Long Valley Creek bisects the HJWA. The creek headwaters are located on Peavine Peak; the watershed drains north approximately 40 miles to terminate in the Honey Lake playa. The Wildlife Area itself is located in the Upper Long Valley section of the watershed, which extends from the headwaters to S.R. 70, and includes the perennial streams of Purdy Creek, Balls Canyon Creek and Evans Creek (WRD 1996). Along with these surface waters, there are at least three springs that support wet-meadow vegetation. Peak water flows occur in early spring (March-May), coinciding with the spring snowmelt in the Sierra. Flows on Long Valley Creek were measured for five years from 1989 to 1994. Average monthly flows were over 35 cubic feet per second (cfs) in March, and below 15 cfs the rest of the year (Brown and Caldwell 2007) (Figure II-e).

Figure II-e. Monthly Average Stream Flows, Long Valley Creek, USGS Gage 10354000, 1989–1994



Source: Adapted from Brown and Caldwell 2007

The Long Valley Groundwater Basin is hydrologically connected to the Honey Lake Groundwater Basin in the north and Cold Springs Valley in the south. The surface area of this basin is 73 sq. miles (DWR 2004). The USGS has reported that Cold Springs Valley receives an estimated 200 to 500 acre feet per year (af/y) as underflow from Long Valley (DWR 1989). A groundwater divide is present near Bordertown, Nevada. South of this divide, groundwater moves southeast into Cold Springs Valley. North of the divide, groundwater moves toward Long Valley Creek. Although the creek is a main source of recharge to the Honey Lake Groundwater Basin, shallow bedrock at the north end of Long Valley restricts groundwater movement (DWR 2004).

There are two water-bearing formations in Long Valley: Quaternary Sedimentary Deposits and the Tertiary Hallelujah Formation. The Quaternary sediments consist primarily of alluvium with limited areal extents and thickness. They provide some recharge to the older sedimentary and lake deposits but are not a significant source of groundwater for the basin. The Hallelujah Formation is the primary water-bearing formation in the valley. This formation ranges in thickness from 3,000 to 8,000 feet. The sediments are composed of fluvial and lacustrine sedimentary debris derived locally from the granite and rhyolite tuff exposed in the valley. The lower part of the formation is marked by beds of sandy pebble and cobble conglomerate that supply most of the groundwater to wells at the southern end of the valley (Brown and Caldwell 2007).

The estimated groundwater storage for the Upper Long Valley, the portion of the basin south of S.R. 70, ranges between 180,000 and 300,000 acre feet (WRD 1989). In 1997, DWR estimated the groundwater extraction for agricultural and municipal/industrial uses at 74 and 28 acre feet, respectively. Deep percolation from agriculture applied water is estimated to be 140 acre feet (DWR 2004, WRD 1996).

3. Climate

With elevations ranging from 5000 feet on the floor of Long Valley to nearly 7000 feet in the mountains, the HJWA is subject to varying temperature regimes. The rain shadow effect caused by the Sierra Nevada results in greater precipitation on the western slopes of the Wildlife Area than occurs on the east side. The nearest available climate data are from the Reno Stead Airport about eight miles to the southeast on the other side of the Petersen Mountains (WRCC 2008). Conditions at Stead are probably comparable to those in Long Valley.

The annual growing season in the vicinity of the HJWA varies widely from 50 to 130 days. Average monthly temperatures range from a low of 31.9° F to a high of 71.7° F. July and August are the warmest months, with average maximum temperatures of 88.3° F and 87.0° F respectively, and each typically having 10 to 14 days on which the temperature exceeds 90° F. The highest temperature recorded at Stead since 1985 was 105° on July 11, 2002. Winter temperatures in the vicinity average 33.4°F with mean highs in the low to mid-40s and lows in the low 20s. Minimum temperatures typically dip below freezing every day from December through February and may do so in all months except July and August. However, the first fall freeze is typically in early October (probability > 60%) and the last spring freeze is typically in late May (probability < 30%). At higher elevations in the HJWA, freezing temperatures likely occur throughout the year. The lowest temperature recorded at Stead since 1985 was -22° F on December 22, 2004.

Since 1985, average annual precipitation in the vicinity of HJWA has been 11.31 inches, but has varied from just under 7 inches (1990) to nearly 24 inches (1996). Half of the annual precipitation occurs in the winter months, with February and December having the highest monthly averages. Rainfall during summer is mostly limited to thunderstorms that contribute only about 1% of the annual precipitation. On average, precipitation of greater than 0.01 inches is likely to occur on just three days from June through August. Precipitation during spring is more variable than that in the fall, and averages about 20% greater. Annual snowfall recorded at Stead since 1985 has averaged 14.3 inches, but was as much as 33.6 inches in 1996. January typically has the highest monthly snowfall, averaging 2.8 inches, but the highest monthly snowfall recorded was 29.5 inches in December of 1992. Observations suggest that snowfall is substantially greater at higher elevations of the HJWA on the west side of the valley. Snowmelt from those slopes and higher terrain beyond the HJWA boundaries results in stream flow through the Wildlife Area into midsummer.

Table II-c presents average monthly climatic data from Stead, Nevada, between 1985 and 2007. Additional climatic data, including an annual summary of weather data from 1985 to 2007, are provided in Appendix B.

Table II-c. Monthly Climate Summary, Stead, Nevada (5046' elevation), 1985-2007

AVERAGE MONTHLY	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	ANNUAL
Max. Temperature (F)	43.1	47.3	55.2	61.5	69.7	79.7	88.3	87.0	78.1	67.2	52.6	43.5	64.4
Mini. Temperature (F)	21.1	24.5	29.8	34.3	41.2	48.4	55.1	53.1	44.9	36.0	26.6	21.6	36.4
Total Precipitation (in.)	1.60	1.98	1.36	0.60	0.60	0.56	0.31	0.26	0.53	0.59	0.97	1.94	11.31
Total Snowfall (in.)	2.8	2.1	2.5	0.6	0.1	0.0	0.0	0.0	0.1	0.1	1.8	4.2	14.3
Snow Depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

Source: Western Regional Climate Center 2008

4. Water Rights

The oversight responsibility for California's water is shared among several agencies. The California court system has jurisdiction over the use of percolating groundwater, riparian use of surface water and the appropriate use of surface water initiated prior to 1914. The State Water Resources Control Board (SWRCB) is responsible for water rights and water quality. It has jurisdiction to issue permits and licenses for water appropriation from surface and underground streams post-1914. The SWRCB also has authority to declare watercourses fully appropriated (available water rights are equalized with available water). The California Department of Water Resources (DWR) is responsible for planning the use of state water supplies and develops, in consultation with the California Water Commission, rules and regulations for that purpose (BLM 2001).

SURFACE WATER

River and other surface water may be diverted, stored and used only under a valid water right. California has two types of surface-water rights: riparian and appropriative. Riparian rights are incidental to ownership of riparian land (land adjacent to the waterway); they do not allow storage, the water must be used on the riparian land, and use does not require a permit. Riparian rights are "all share alike" or "correlative rights," meaning there is no priority of use against other riparian rights holders (during times of drought, all share the shortage). Riparian rights remain with the land when riparian lands are sold and are not lost through non-use (BLM 2001).

There are two types of appropriative rights: pre-1914, which must have been perfected by mid-1914 and must have been used essentially continuously since then; and post-1914 rights, which require a permit (or license based on a permit) granted by the SWRCB. Because appropriative rights are based on seniority (first in time, first in right), the SWRCB considers an application for a permit only if there is unappropriated water in the stream.

Long Valley Creek Stream System Adjudication. In 1976, after many years of litigation, Long Valley Creek water rights claimants successfully petitioned the SWRCB, and the appropriative rights of the Long Valley Creek Stream System were adjudicated in Decree 12999 (SWRCB 1976). Decree 12999 sets forth diversion rates on Long Valley Creek and its tributaries over the entire watershed extending from the upper watershed near Peavine Peak and Bald Mountain to the lower watershed near Honey Lake. Although diversion rates were set forth, the annual duty (the amount reasonably necessary for economical and beneficial use) in acre feet per year (af/y) or acre feet per acre (af/a) were not established or claimed (WRD 1992).

The Long Valley Creek Stream System adjudication is divided into three schedules:

- Schedule A addresses special class rights (the highest priority), usually limited to springs and seeps for domestic and stock uses.
- Schedule B involves tributary rights (such as Balls, Purdy and Evans creeks), which have either higher or correlative priority rights with Schedule C.
- Schedule C details water rights specific to Long Valley Creek itself.

Within schedules B and C, the diversions are further prioritized into levels 1-9, with level 1 having the highest priority and designated for either domestic/stock water or irrigation uses (SWRCB 1976). A level 1 water right has the highest priority so that, for example, if a right was ranked level 3, all of

the higher priority rights under levels 1 and 2 would have to be met before the third priority level was diverted. In the event that the water supply can meet only part of the entitlement of any specific priority level, the available water supply will be prorated in accordance with the allotments in that priority level (SWRCB 1976). A summary table of adjudicated water rights and associated priorities pertaining to the HJWA area under the Long Valley Creek decree is provided in Appendix C1.

HJWA Surface Water Rights. Based upon a preliminary review of the HJWA land acquisition history, various historical water reports (Mahannah 1991, 2002; WRD 1989, 1992, 1996), and the Long Valley Creek decree, it appears that the HJWA holds surface water rights (with varying priority levels) in schedules B and C:

Schedule B-1	East Branch and Unnamed Tributary
Schedule B-2	South Creek
Schedule B-3	Purdy Creek and Tributaries
Schedule B-4	Balls Creek and Tributaries
Schedule B-5	Occidental Unnamed Streams
Schedule B-6	Evans Canyon Creek
Schedule C	Long Valley Creek

Available Water and Rights. In 1998, the SWRCB declared the Long Valley Creek Stream System fully appropriated annually from March 1 to September 30 (SWRCB 1998).

Water obtained by either riparian or appropriative rights must be put to reasonable beneficial use and not wasted (California Water Code, Section 100, 1200-1244). Riparian rights can be lost by severance or condemnation but not by non-use (forfeiture). Appropriative rights may be lost by severance, abandonment, forfeiture, prescription and adjudication (SWRCB 2003). Generally appropriative rights are subject to forfeiture if such rights are not used for a period of five consecutive years, although further research is required to determine if Decree 12999 protects Long Valley Stream System recipients from this rule of law. Riparian rights are generally given preference over appropriative rights; however, in a 1979 decision involving the Long Valley Stream System, the California Supreme Court ruled that unexercised riparian rights may lose priority in the adjudicative process and become subordinate to appropriative rights within the system (*In Re Waters of the Long Valley Creek Steam System* (25 Cal.3d 339, 599 P.2d 656 [1979])).

A query of the Electronic Water Rights Information Management System (eWRIMS) (SWRCB 2007) listed 13 points of diversion within the HJWA; water rights for all 13 diversion points had been cancelled (Appendix C2)

GROUNDWATER

In California, groundwater rights are either overlying or appropriative. Overlying groundwater rights are similar to riparian rights—incidental to landownership and correlative (all share alike). Groundwater appropriation is subordinate to overlying uses and also based on a first-in-time, first-in-right priority system. All groundwater rights are also subject to reasonable and beneficial use requirements and can be lost by severance, condemnation and prescription but not by forfeiture (non-use). Generally the state asserts no permitting authority over percolating groundwater (California Water Code, Section 1200-1). DWR's groundwater responsibilities extend to mapping groundwater basins, keeping well reports, assigning well numbers and investigating and collecting groundwater information. DWR is not responsible for protecting groundwater quality or regulating its use.

In 1980, California passed the Sierra Valley Groundwater Basin Act. This act authorized the formation of two groundwater districts, including the Long Valley Groundwater Management District (LVGMD). The LVGMD, which includes portions of Lassen and Sierra counties within the Long Valley Groundwater Basin, is one of 16 adjudicated groundwater basins in California (BLM 2001). The district was established after large wells were drilled near Border Town on the Nevada side of Long Valley, raising concerns that the basin would be overdrafted. The act gave the district the power to curtail or suspend pumping, and to ban exportation out of the basin in the event of overdrafting or water quality problems (Lassen County 1999). Lassen and Sierra counties entered into a joint powers agreement in June 1985 to address their commitment to managing the district. In 1989, the LVGMD enacted ordinance 89-01 to require a permit for groundwater exportation (Brown and Caldwell 2007; DWR 2003, 2004).

Based upon a review of the historical easements and consultant reports (Mahannah 1991, 2002; WRD 1996), there appear to be a number of groundwater wells and monitoring wells on the HJWA (Table II-d); however, they are not well-documented and their condition is unknown at this time.

Table II-d. Well Locations On or Near the Hallelujah Junction Wildlife Area

Well Name	Location (Township, Range, Quarter Section, Section)	Production Depth	Drilled Test Hole	Static Water Level	Production Capacity AF/Y*
Havanna 6"	T21N, R17E, SESW Sec 24	220		26.60	
Green Gulch TH	T21N, R17E, NWSE Sec 24		465	5.4	
TH 6, PW2	T21N, R17E, NWSE Sec 13	240	1100	22.35	200
TH7	T21N, R17E, SESE Sec 12		800	5.70	
TH5	T21N, R17E, NENE Sec 12		500	29.50	
E3 (PW4)	T21N, R17E, NENE Sec 12	710	770	72.90	1932
PW1	T21N, R17E, NWNE Sec 12	630	700	23.60	322
TH2	T21N, R17E, SWSE Sec 01		700	27.90	
E1 (PW3)	T21N, R17E, NWSE Sec 01	530	770	103.25	805
E4	T21N, R17E, NWSE Sec 01	205	205	96.60	
TH3	T22N, R17E, SWSW Sec 36		500	31	
TH4	T22N, R17E, SESE Sec 26		720	20.60	
CT North	T22N, R17E, NESE Sec 26	267		18	400
Evans #1	T21N, R17E, NENE Sec 10		500	37.10	80
TH9	T21N, R17E, SWSW Sec 11		198	166.50	
TH11	T21N, R17E, SENW Sec 01		270		
CT South	T21N, R17E, Sec 12	300			500

AF/Y: Acre-feet per year Source: WRD 1996, 2002

Queries of the eWRIMBS (SWRCB 2007) did not identify any recent activity to acquire water rights in the Long Valley Creek System; however, climate change effects, anticipated population growth, and existing memorandums outlining groundwater acquisition strategies for nearby urban centers indicate increasing pressures and demands on water resources in the area.

D. Cultural History

Compilation of the cultural resource history of the HJWA is based on an extensive literature review, a review of unpublished archaeological reports and records, database searches, and reconnaissance-level field surveys. Data sources included the BLM's General Land Office (GLO) Records (2006); California Historical Landmarks at the Office of Historic Preservation (1990); Northeast Information Center, CSU-Chico; the California Room, California State Library; and the Sacramento Archives and Museum Collection Center. Archaeologists conducted reconnaissance level surveys in May 2007. The results of the records search are housed at CDFG's HJWA office. This information contains detailed archaeological site information, which should be considered sensitive and confidential.

1. Land Use

PREHISTORIC

The following description of the Long Valley area's archaeological phases is derived largely from Elston (1986), in which he breaks down the western Great Basin into three regions: Central Subregion, Lahontan Basin, and the East Slope of the Sierra Nevada. Long Valley belongs to the East Slope region. Table II-e summarizes the archaeological phases discussed below.

The Paleoindian (11,000 - 8000 B.C.) era is the oldest period of human occupation in the Western Hemisphere. Large fluted Clovis and Folsom projectile points, mounted on hand-held spears, typify sites of this period. Subsistence during the Paleoindian era focused on megafauna and other large mammals. Other food resources included small mammals, birds, tubers, and easily harvested edible plants. The population was sparse and highly mobile. Sites are commonly found along Pleistocene lake shores, and range from single isolated artifacts to temporary hunting camps. No sites of this type have been found in the Long Valley area. These early sites appear to be largely limited to Central and Southern California Pleistocene Lakeshores.

The Prearchaic (8000 - 5000 B.C.) era appears to be an adaptation to the extinction of North America's megafauna at the close of the Pleistocene, and the warming and drying of the climate. Subsistence appears to still have largely been based on large game. Artifact assemblages from these sites often include large bifacial knives, stemmed and concave based points, crescents, scrapers, and large choppers. Many lithic tools from this period are heavily worn and reworked. Although rare, milling stones are occasionally found at such sites. Sites are typically found on gravel bars and other high ground along rivers and creeks feeding into marshes and shallow lakes. No sites of this type have been recorded in the Long Valley Area.

The Early Archaic (5000 - 2000 B.C.) era appears to be the earliest period of occupation for this part of the Great Basin. During this time, most of the marshes and lakes dried up. The presence of Pinto and Gypsum projectile points, used to tip atlatl darts, typify sites of this period. Big game hunting remained prevalent, although projectile points and other hunting implements became smaller and less specialized. The presence of mano and metate milling stones reflects an increased and intensive use of grass seeds. Caves and other rock shelters became more widely used for the storage of goods. Settlements were predominately near waterways in the lower elevations. A scarcity of sites indicates the population density was probably low. Residential structures are larger than those of later periods, possibly indicating the housing of extended families under one roof (ibid.).

The Middle Archaic (2000 B.C. - A.D. 500) was a period of cooling temperatures and more precipitation. More meadows, marshes, and lakes at lower elevations probably balanced less hospitable conditions at higher elevations. More extensive use of caves and rock-shelters for storage, combined with continued reoccupation of sites, indicate a more sedentary lifestyle and less mobility. Houses were 2-4 meters in diameter, with internal features. At the Hallelujah Junction and Bordertown sites, archaeological features include storage pits, rock-lined hearths, and burials. Preferred occupation sites were near waterways, in particular hot springs. Seed processing camps are found at the margins of meadows, adjacent to streams and creeks. Combined seed collecting and hunting camps are found at higher elevation meadows. Hunting camps are generally found on ridges and saddles overlooking streams and springs. Large game hunting focused on bighorn sheep and mule deer. In addition to the large game and grass seeds that made up the majority of the diet during the previous era, the remains of small mammals begin to appear in abundance at sites. Lithic technology focused on the production of large bifaces, which generated substantial waste, making sites more visible. Typical projectile points include Elko and Martis points, again used on atlatl darts. Trade increased with outside areas, specifically for obsidian and shell (Elston 1986).

Table II-e. Archaeological Phases of the Eastern Sierra Nevada/Western Great Basin

Age	Adaptive Strategy	Name	Characteristics
11,000–8000 B.C.	Paleoindian		Large fluted points, fine silicate flake stone tools, lack of milling stones
8000– 5000 B.C.	Prearchaic	Tahoe Reach	Large bifacial knives, stemmed and concave based points, crescents, scrapers, large choppers.
5000–2000 B.C.	Early Archaic	Spooner	Pinto points, manos and metates; residential camps with large structures near rivers, with hunting camps in upland scrub.
2000 B.C– A.D. 500	Middle Archaic	Martis	Elko and Martis points, manos and metates; residential camps near waterways, hunting and harvesting camps along creeks, springs, and ridges overlooking such.
A.D. 500–1850	Late Archaic	Late Kings Beach	Desert series points, mortars, hullers; smaller houses lacking internal features, relocation to riverine residential sites.
		Early Kings Beach	Rose Spring and Eastgate points, flake tools, emphasis on rabbit and other small game
A.D. 1850–present	Historic Period	Washoe	Gradual and selective adoption of Euro-American goods and lifestyle.

Source: Elston 1986

ETHNOGRAPHIC

At the time of contact with Euro-American people, Hokan-speaking Washoe were the primary human occupants of Long Valley. The Washoe were a culturally distinct group, not related to the other Great Basin groups (who were all Numic speakers), nor their California neighbors, the Maidu and Miwok.



Washoe woman. Edward S. Curtis Collection, 1926

The lifestyle of the Washoe blended the major aspects of both the California and Great Basin tribes. During the contact period in California, the subsistence economy was based on acorns and fish, while the Great Basin's Northern Paiute subsisted largely on pine nuts and the hunting of both small and large game. The Washoe were fortunate enough to have access to all of these food resource groups. One of the Great Basin's few oak groves was situated on the western end of Honey Lake Valley, providing the Washoe access to the highly valued black oak acorn. Pinyon pine nuts provided a food source rich in both fats and protein. Pine nuts were collected seasonally, and gatherers used long, hooked sticks to knock or pull the cones from the trees. In some cases, individual families "owned" particular trees or groves of trees. Grass seeds were extensively gathered, which, along with pine nuts, could be ground on large flat milling stones, commonly known by their Mexican name of *metates*. Other plant resources, including juniper berries, cattails, miners lettuce, and soap root, were also gathered when available.

The abundance of fish available to the Washoe was an unusual resource for most of the Great Basin cultural groups. The Washoe were fortunate to have several large bodies of water rich in fish resources. Lake Tahoe was at the heart of Washoe territory, and was full of trout, Tahoe suckers, and Lahontan Tui chub. Trout, Tahoe suckers, and mountain white fish were harvested from the Truckee and Walker Rivers. Forays were also made to the Pyramid and Walker Rivers for trout. In Long Valley Creek, major runs of Lahontan suckers were harvested during their spring migration run. Rabbits, quail, and other small game were harvested communally. Hunters would spread out into a line and drive the animals into long low nets. Deer, pronghorn and even mountain sheep were hunted in similar communal fashion. Extensive rock walls were constructed along natural migration routes to funnel animals into narrow canyons and then into large stone corrals, where the animals could be dispatched at will. Small rock blinds were constructed for hunters to hide behind and help drive the animals into the trap at the appropriate moment. The favored hunting weapon at the time of contact was the bow and arrow, tipped with a small stone point (D'Azevedo 1986).

Resources were only seasonally available, forcing the population to move frequently, following a cyclic pattern to harvest resources as they became available. Because of their nomadic lifestyle, their possessions were limited to what they could carry: clothing, knives, drills, scrapers, nets, weapons, etc. Heavier items such as milling stones were often left at frequently visited resource areas. Migration routes included stops not only at food sources, but stone quarries, utilitarian plant sources, and the like. Clothing was minimal, with rabbit skin blankets used only in the coldest weather (ibid.).

In the winter, the Washoe typically gathered together in larger multifamily villages of 10-15 units. Housing was more typical of California styles than Great Basin, with bark covered conical structures set up over a shallow house pit. The larger communal structures typical in California, often called dance houses, were absent (ibid.). In the spring, the families dispersed on their individual migration routes. Temporary summer camps were occupied near essential resources, usually near a source of water. Summer shelters were limited to simple brush windcreens.

Political organization was limited. At winter camps, a headman was elected, although his power and leadership were not great. The concept of a “chief” is one that appears to have been imposed by later white settlers. In their desire to simplify their dealings with the Washoe, the settlers sought out individuals who would speak for the various groups, assigning them the informal title of “captain.” In 1859, Indian Agent Frederick Dodge described the Washoe as composed of three smaller bands led by Captain Jim, Pos-Souke, and Deer Dick. Captain Jim was the leader of a group centered near Genoa. Pos-Souke was the leader of a group in the Markleeville-Woodfords area, and Deer Dick led a group based at Honey Lake and Long Valley (D’Azevedo 1986).

Washoe territory was not precisely defined, and boundaries likely shifted over time. Peripheral areas were likely used by the Northern Paiute, Miwok, and Maidu. Through passage was also often allowed, as was the sharing of resources when plentiful.

HISTORIC

Trappers likely visited the area, although few documented their passage. James Beckwourth, an African-American mountain man, trapper, and explorer, had been looking for a better route for wagon



Trapper, explorer and mountain man
James Beckwourth. Smithsonian.

trains to reach Marysville. He discovered what is now known as Beckwourth Pass in the spring of 1850, and immediately set about establishing a trail to Marysville. He worked on the trail in the summer and fall of 1850 and the spring of 1851. In the late summer of that year, he led the first wagon train of settlers along the trail into Marysville (James Pierson Beckwourth 2007). The Beckwourth Trail was used heavily until about 1855, when other more accessible routes came into use. The Beckwourth Trail left the California Trail from the Truckee River, about where Reno is now situated. The trail went north and west from there (roughly along the route now followed by U.S. 395), then turned west through the Beckwourth Pass. In Sierra Valley, west of the pass, Beckwourth established his War Horse Ranch and trading post. The trail then went north and west along Grizzly Creek. From there it went west to American Valley (now Quincy), turned southwest past Buck's Lake and Mountain House, and on to Bidwell's Bar at the confluence of the three forks of the Feather River. Bidwell's Bar now lies under Lake Oroville. The trail then proceeded southward to Marysville. The Beckwourth Trail did not

follow the Feather River Canyon, which has far more rugged terrain. The Oroville-Quincy Highway follows the route of the Beckwourth Trail fairly closely (Plumas National Forest 2007). S.R. 70 now passes over Beckwourth Pass.

After California became part of the United States, Long Valley initially became part of Butte and Yuba counties. Both were large counties with their governmental seats at their western ends. It soon became apparent that this arrangement would not work due to the long distances between the county seats and the far reaches of the counties. They were split and formed into the new Sierra and Lassen counties. Despite this history, the Long Valley area remained extremely remote, as it was isolated from the rest of the counties by the Sierra Nevada. The area was so remote that no mention is made of

the area or its settlers in the official county histories for Butte, Yuba, Lassen or Sierra counties (Thompson & West 1879, Farris & Smith 1882, Delay 1924).

Mining. Miners likely also visited the area early on. After the initial Gold Rush to California in 1849, many of California's mines were quickly depleted, and most of the productive mines were rapidly consolidating into the hands of a few wealthy individuals and corporations. Miners were soon scouring the other side of the Sierra Nevada Mountains in search of new riches. They ultimately discovered the rich gold and silver deposits of the Comstock Lode. Mining activity in the Long Valley area appears to have been fairly limited. One source notes mining activity prior to 1925 in the Diamond Mountains near Doyle, at Peavine Peak, and the Antelope Mine near "Purdy" (Myrick 1992). A review of the Evans Canyon 7.5' USGS Quad shows a number of prospects and shafts scattered around the perimeters of Haskell and Little Haskell Peaks. Because the map is 30 years old, it is impossible to tell whether this mining activity is historic in nature or not. Many would-be miners soon moved on to other endeavors, primarily supplying the miners with needed food and goods.

Farming/Ranching. In comparison with much of the surrounding arid environment, Long Valley provides a rich environment for farming and ranching as Long Valley Creek provided a year-round source of water. General Land Office plats show settlers as early as 1866.

A search of BLM's General Land Office records (2006) shows an extensive list of homesteaders in and around Long Valley (Table II-f). The earliest patents date to 1869 which, based on the Land Law of 1820, limited land acquisition to 80 acres at a price of \$1.25 an acre. The Homestead Act of 1862 enabled anyone to enter a land patent and obtain a quarter section of land (160 acres). Once the applicant built a dwelling on the land, dug a well, plowed a minimum of 10 acres, fenced a portion of the land, and lived there for five years, the patent entry was completed, and the land was theirs. As an alternative to plowing 10 acres, the applicant could complete the patent entry by planting and successfully cultivating 10 acres of timber. As Congress had decided that the disposition of public land would not be used as a means to generate revenue for the federal government, the only costs borne by the applicant were those associated with establishing a homestead, plus a \$14 patent filing fee (Sandoz 1963).

The lenient terms of the Homestead Act meant that the landless poor, such as recent immigrants and day laborers, could be elevated to the status of landowner. These terms, including the absence of any criteria for qualification, also meant that people who were not knowledgeable about farming practices could get 160 acres of land just as easily as someone who had extensive farming experience. This was often problematic with regard to the success of a homestead, especially when coupled with arid conditions. Despite these basic problems, from 1863 to 1900, more than 600,000 farmers received clear title under the act to U.S. lands totaling 80 million acres (Hibbard 1965). The Stock Raising Homestead Act of 1916 was the last federal program used in Long Valley for the transfer of federal land into private hands. This later land act sped up the transfer of federal land to private hands, allowing the acquisition of land deemed unfit for purposes other than stock grazing and the growing of forage (Earthworks 2007).

Table II-f. Patented Lands at Hallelujah Junction Wildlife Area

Name	Description	Date	Authority
T21N R17E			
Section 1			
Central Pacific Railroad Company	SW & S1/2NW & W1/2SE & SWNE & Lot 1 of NWNW & Lot 2 of NENW & Lot 3 of NWNE & Lot for of NENE & Lot 5 of SENE & Lot 6 of NESE & Lot 7 of SESE	February 26, 1875	1862 Grant
Section 2			
George C S Donohoe	E1/2SE & SENE & Lot 1	January 16, 1919	1862 Homestead Act
Mary A Evans	W1/2SE & SWNE & Lot 2	March 23, 1921	
Section 4			
Gotthard Diethelm	N1/2SE & SENE & Lot 1	March 7, 1924	1862 Homestead Act
Matilda E Evans	S1/2S1/2	November 21, 1902	1862 Homestead Act
Section 10			
Edith M Evans	S1/2SW & NESW & SWSE & SENW & S1/2NE & NENE	September 25, 1918	1862 Homestead Act
Edith M Evans	NWNE & N1/2NW & SWNW	February 24, 1928	1916 SRHA
Section 11			
Central Pacific Railroad Company	All	February 26, 1875	1862 Grant
Section 12			
David Evans	E1/2SW & NWNE & Lot 1	October 30, 1882	1862 Homestead
David Evans	SWNE & Lot 3 of NESE & Lot 4 of SESE	April 5, 1877	1820 Land Act
James L Evans	SWSE & Lot 4 of SESE	November 25, 1879	1820 Land Act
Section 13			
Central Pacific Railroad Company	W1/2 & W1/2E1/2 & Lot 1 of NENE & Lot 2 of SENE & Lot 3 of NESE & Lot 4 of SESE	February 26, 1875	1862 Railroad Grant
Section 14			
David Franklin Evans	N1/2	September 25, 1918	1862 Homestead Act
David Franklin Evans	S1/2	March 14, 1925	1916 SRHA
Section 16			
State of California	16	January 2, 1877	1853 California Enabling Act
Section 23			
Central Pacific Railroad Company	All	February 26, 1875	1862 Grant
Section 24			
Silas Edward Forman	NWNE	November 1, 1869	1820 Land Act
William E Lemmon	SENE & NESW	September 24, 1909	1820 Land Act
Elizabeth Jane Purdy & Sara Ann Purdy & Solomon Purdy	NWSE	March 23, 1892	1820 Land Act
Henry Hadden Purdy	NENW	November 1, 1869	1820 Land Act
Solomon Forman Purdy	SWSE & Lot 3 of NESE & Lot 4 of SESE	November 1, 1869	1820 Land Act
Solomon Purdy	SWNE & Lot 1 of NENE & Lot 2 of SENE	June 15, 1871	1820 Land Act
T21N R18E			
Section 7			
Mono Land and Livestock Co. & Beatrice Sario & Josephine Sario & Sario Livestock Co.	E1/2W1/2 & W1/2NE & Lot 1 of NWNW & Lot 2 of SWNW & Lot 3 of NWSW & Lot 4 of SWSW	February 25, 1949	1899 Land Exchange National Forest

Name	Description	Date	Authority
T21N R18E			
Section 18			
Joseph MC C Painter	Lot 3 of NWSW & Lot 4 of SWSW	August 5, 1872	1820 Land Act
Sophie Roberts	E1/2SW & SENW & Lot 2 of SWNW	September 9, 1909	1862 Homestead Act
Section 30			
Joseph Hall	SESW & Lot 3 of NWSW & Lot 4 of SWSW	August 5, 1872	1820 Land Act
T22N R17E			
Section 26			
Hiram Dean	S1/2SE & NESE	June 2, 1904	1862 Homestead Act
David Franklin Evans	SWNW	February 18, 1920	1820 Land Act
Edith M Evans	NWSW	April 12, 1928	1820 Land Act
Jonathan C Roberts	N12/NW & SWNE & SENW	December 10, 1881	1820 Land Act
Julius Roberts	S1/2SE & NESW & NWSE	April 1, 1899	1862 Homestead Act
John P Williams	SENE	March 1, 1940	1916 SRHA
Section 27			
Hiram A Dean	NENE	May 28, 1925	1862 Homestead Act
Edith M Evans	SENE & NESE	April 12, 1928	1820 Land Act
Donald B Munro	NWNE	February 11, 1920	1862 Homestead Act
Wilmer Fenton Pabst	SESE	March 15, 1928	1862 Homestead Act
Wilmer Fenton Pabst	S1/2SW & SENW & SWNE & W1/2SE	March 15, 1928	1916 SRHA
John P Williams	N1/2NW & SWNW & N1/2SW	March 1, 1940	1916 SRHA
Section 28			
Juanita Beisel & Juanita March	NW & W1/2NE & E1/2SW	November 24, 1928	1916 SRHA
Edith Evans	W1/2SE	June 11, 1952	1820 Land Act
Wilmer Fenton Pabst	E1/2NE	March 15, 1928	1916 SRHA
Angelo Trosie	Manzone Lode Claim	March 4, 1912	1866 Mineral Patent
Section 33			
Gotthard Diethelm	NE	March 7, 1924	1916 SRHA
Section 34			
Gotthard Diethelm	W1/2NW & SW & S1/2SE	March 7, 1924	1916 SRHA
Edith Evans	NENW & W1/2NE	February 17, 1954	
William Fenton Pabst	E1/2NE & NESE	March 15, 1928	1862 Homestead Act
Jonathan C. Roberts & Mary Heirs of Robinet	SENW	September 21, 1891	
Section 35			
Hiram Dean	NENE	June 2, 1904	1862 Homestead Act
Edith M Evans	NENE & N1/2NW	February 24, 1928	1916 SRHA
T22N R18E			
Section 30			
James B Talbott & William H Carr	SWNE	February 17, 1915	1862 Homestead Act
Edith Evans	E1/2SW & W1/2SE & Lot 3 of NESW & Lot 4 of SWSW & Lot 5 of SESE & Lot 6 of NESE	June 30, 1953	1934 Taylor Act

Source: BLM GLO Records 2006

Transportation/Railroad. In December 1880, construction began in Reno on the narrow gauge Nevada & Oregon Railroad, a railroad with a constantly changing business and construction plan. Construction had commenced for less than three miles when it came to a halt, due to lack of funding and direction. The railroad was reorganized in April 1881 as the Nevada-California-Oregon (N-C-O) Railway. By August, they had six miles of track laid with a locomotive and rolling stock that kept moving materials forward. By November, the railroad had reached David Evans' Ranch in Long Valley, where Evans had 30 acres of wheat under cultivation. At that point, the troubled railroad again ran out of money, laying off its work force. The Evans Ranch became the northern terminus of the railroad, and was known over the years as Oneida, Antelope, Evans, and possibly Purdy. The ranch has been recorded as an archaeological site.

It was not until October 1882 that regular service began between Oneida and Reno. From Oneida, passengers could take a stage to Susanville. Freight was flowing the other way with lumber from Brad & Schooling's Mill being shipped south to Reno. Service continued fairly regularly, but the company faced many financial difficulties, stemming back to the fraudulent activities of its founders. The railroad changed hands, and was reorganized several times. The line was extended incrementally: 1884 to Junction House; 1885 side-line to Mohawk; 1887-1889 to Amedee; 1899 to Termo; 1902 to Madeline; 1907 to Likely; 1908 to Alturas; and in 1912 to Lakeview. After 1910, the railroad saw continual losses. In 1925, the Southern Pacific (S.P.) made a reasonable offer to the owners of the N-C-O and a deal was quickly struck. The S.P. set about converting the railroad to standard gauge, instead of the antiquated narrow gauge. Thus, it was the end of the N-C-O (Myrick 1992).

2. Known Cultural Resources

Cultural resources at the HJWA can be grouped into several categories. Prevalent are prehistoric temporary-use sites, generally sparse lithic scatters. Also prevalent are prehistoric residential sites that include not only lithics, but also milling stones, hearths, faunal material, midden and burials. These sites are clustered along Long Valley Creek, which was known ethnographically to have been an important fishing ground. It was also noted ethnographically that Long Valley supported a sizable Washoe population well into the nineteenth century.

Historic sites can be grouped into three major categories: mining, farming/ranching, and transportation. Even prehistoric Long Valley was a major transportation corridor for native people, and the opening of Beckwourth Trail in 1850 put the area on the map for white settlers as well. Scott Road parallels the Beckwourth Trail running through the area, linking Virginia City and Honey Lake. Later, in 1882, came the N-C-O Railway. Finally, came State Highway 395 (originally State Highway 6, now U.S. 395), which also parallels much of Beckwourth Trail. Other than transportation, the primary use of the area was farming and ranching, as homesteads were established at least as early as the 1860s. These homesteads are scattered throughout Long Valley, and many of these remains are still visible, including standing structures, foundations, domestic refuse scatters, farm implements, fence lines, roads, and irrigation systems. These seem to be concentrated on the west side of U.S. 395. Mining sites are clustered on and around surrounding hillsides, in particular Haskell and Little Haskell peaks.

EXISTING SITE RECORDS

Large portions of the HJWA have been previously surveyed for cultural resources during the implementation of other unrelated projects. The most notable of these were the Alturas Intertie (Kautz and Hutchins 1995) and Evans Ranch Subdivision (Peak & Associates 1992) projects, which each covered several hundred acres of the Wildlife Area. A records search at the Northeast Information Center yielded 24 archaeological sites with prehistoric, prehistoric and historic, or historic components that have been documented within the Wildlife Area (Table II-g). Eight prehistoric isolates and four historic isolates have also been located and formally recorded. More detailed descriptions of the sites are housed at CDFG's HJWA office.

To provide a more rounded picture of site types and distribution, data concerning sites within a half mile of the HJWA were also obtained from the Northeast Information Center. Within a half mile of the Wildlife Area are 12 prehistoric and/or historical archaeological sites (Table II-h).

Table II-g. Known Archaeological Sites, Hallelujah Junction Wildlife Area

Site Numbers	Prehistoric components	Historic components
CA-LAS-370	Burial with basket, projectile points, mano, metates, scraper, and lithic rescaterring	
CA-LAS-403H		Refuse deposit
CA-LAS-1840/H	Lithic scatter	Refuse deposit
CA-LAS-2220H		Scott Road (Virginia City to Honey Lake Road)
CA-SIE-79	Lithic scatter and milling stone fragments	
CA-SIE-80	Lithic scatter, projectile points, and mano	
CA-SIE-81	Projectile points, milling stone fragments, and lithic scatter	
CA-SIE-715	Lithic scatter and bifaces	
CA-SIE-716	Lithic scatter	
CA-SIE-717	Lithic scatter	
CA-SIE-718	Lithic scatter and biface	
CA-SIE-719H	Lithic scatter	Historic component
CA-SIE-720H		Refuse deposit
CA-SIE-721	Projectile points, lithic scatter, chopper, scrapers, and biface	
CA-SIE-805H	Lithic scatter and historic component	Tobacco tin
CA-SIE-806	Lithic scatter, projectile points, and biface	
CA-SIE-807	Lithic scatter	
CA-SIE-808H		Refuse deposit
CA-SIE-809H		Refuse deposit, depression with rock piles
CA-SIE-810H	Lithic scatter and historic components	Refuse deposit
CA-SIE-812H		Refuse deposit
CA-SIE-815H		Two earth-filled check dams
CA-SIE-972	Lithic scatter, projectile points, and metate	
CA-SIE-973H	Refuse deposit	

Source: Northeast Center of the California Historical Resources System

Table II-h. Archaeological Sites Within a Half Mile the Hallelujah Junction Wildlife Area

Site Number	Prehistoric Components	Historic Components
CA-LAS-371	Fire-cracked rock	
CA-LAS-374	Lithic scatter, fire-cracked rock, and grinding stones	
CA-LAS-551	Lithic scatter, projectile points, scraper, and manos	
CA-LAS-1572	Lithic scatter, projectile points, house pit, cores, faunal material, burned wood.	
CA-LAS-1573	Lithic scatter, bifaces, projectile points, burned wood, and faunal material	
CA-LAS-1574	Lithic scatter, manos, projectile points, faunal material, and burned wood	
CA-LAS-1575	Lithic scatter, projectile points, and cores	
CA-LAS-1847	Metate, mano, projectile points, bifaces, drill, lithic scatter, fire-cracked rock	Historic component
P-18-003380	Isolate biface	
CA-SIE-811H	Prehistoric component	Refuse deposit
CA-SIE-813H	Prehistoric component	Refuse deposit
CA-SIE-814H		Refuse deposit

Source: Northeast Center of the California Historical Resources System

NEW SITES NOTED

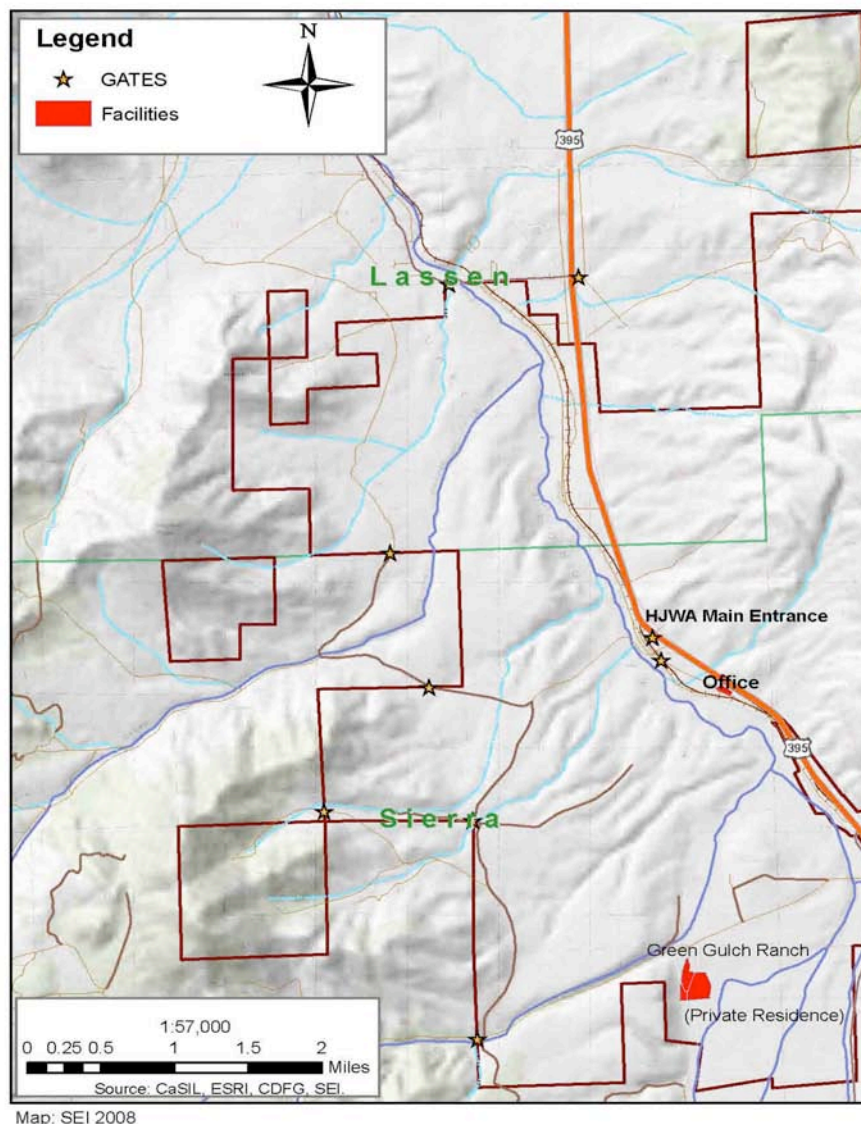
Eight new archaeological sites were noted during the May 2007 reconnaissance surveys (S. Baxter, Past Forward Inc., unpublished information). The following discussion provides details on these sites:

- SB-1 is a small refuse deposit of Aqua glass, sanitary cans, and white improved earthenware on the north side of a single-track dirt road.
- SB-2 is a complex series of dry-laid, native-stone foundations, a small concrete pump-house, a standing wood-framed cabin, a wood-framed chicken coop, and a dense refuse scatter of 1930s-1960s bottles, cans, and miscellaneous materials.
- SB-3 is a cabin set in an aspen grove. The structure actually lies just outside the HJWA boundary. It is noted here, as the location is a typical setting for a sheepherder's camp, and the house appears to be historic. There is a high likelihood that this site was historically occupied, and that portions of the site probably fall within the HJWA.
- SB-4 is an array of old farm implements including a hay rake and hay bailer.
- SB-5 is a mine that consists of a small gable-roofed shed or residential building, head-frame, ore bins, and an extensive collection of modern refuse including portions of automobiles and a fuel-bearing tractor-trailer. The shed and portions of the head-frame and ore bins are clad with T-1-11 siding, indicating the structures are probably not more than 40 years old.
- SB-6 is that portion of the old N-C-O Railway that runs through the HJWA. Portions of the railroad have been previously recorded (Kautz and Hutchins 1995), although the records search conducted by the Northeast Information Center did not provide a site record. This was likely an oversight, since the site, as recorded, runs for many miles from Reno to Alturas.

These six sites were not officially recorded during the course of this project; eventually these should be formally recorded using appropriate DPR 523 forms.

- SB-7 includes those portions of the Beckwourth Trail that cross through the Wildlife Area. The Northeast Information Center provided maps showing the route of the trail as it passes through the Wildlife Area, although it does not appear to have ever been formally recorded.
- SB-8 is U.S. 395. It may be considered a potential historic resource. The road was originally designated State Highway 6, and was one of the first designated highways in the state. In 1928, it was re-designated Highway 395. In its heyday, it ran from San Diego to the Canadian border (Baxter and Allen 2003). It is possible that this stretch of U.S. 395 has been recorded previously, although the Northeast Information Center provided no record; this should be verified.

3. Existing Structures



The HJWA has few buildings or other structures that are used for CDFG operations. An office building is located adjacent to the on-site manager's residence on Scott Road. Green Gulch Ranch has various barns, outbuildings and a residence, but maintenance of these facilities is the responsibility of the lessee. Other structures on the property may be considered historical resources and need further investigation.